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FORESTRY SCIENCE PHOTO STORY

No. 33

Do Rocks Hold Answers to Environmental Ills?

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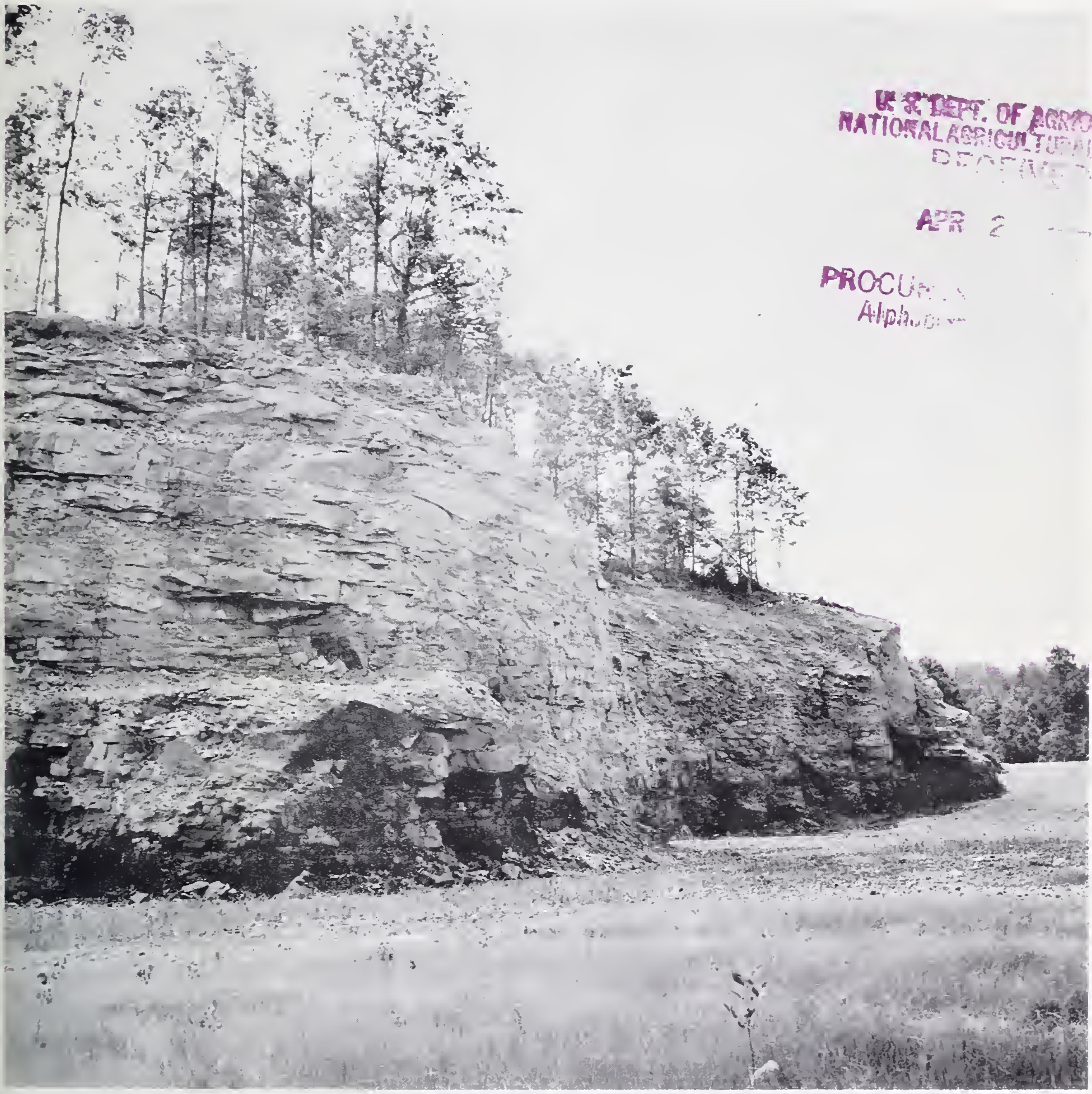

A strip-mine highwall in Kentucky - this aftermath of mining also holds clues to successful reclamation.

IF prevention is the best cure, then geological studies may be the answer to some of the environmental ills caused by stripping for coal. →

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NORTHEASTERN FOREST EXPERIMENT STATION • UPPER DARBY, PENNSYLVANIA 19082

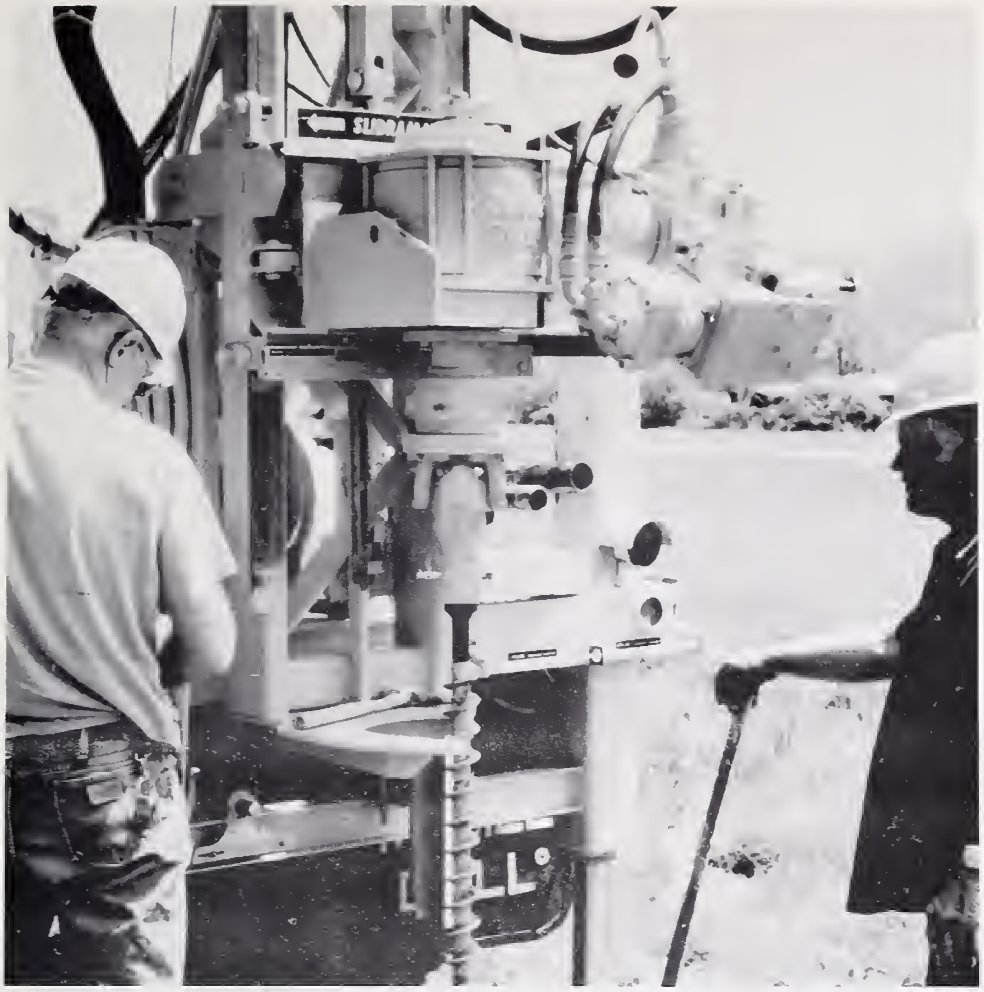
Geologist Tom Despard collects samples by hand from a highwall.

Each strip mine site presents unique problems to the people responsible for reclamation. Usually no one knows what the problems will be until after the mining is done. And by then it's often too late.

If data about the land to be stripped could be analyzed beforehand, miners and reclaimers could predict and plan their activities around the prevailing conditions.

Geological studies provide an alternative to hindsight. Tom Despard, research geologist with the U.S. Forest Service's Northeastern Forest Experiment Station reclamation research project in Berea, Ky., thinks that the benefits could be two-fold. First, damage to the environment could be minimized, since problems that are foreseen can more easily be avoided. Second, mining companies and regulatory agencies could better predict the cost and feasibility of reclamation. Unfortunately, preliminary studies are the exception rather than the rule.

At present the Forest Service geologist works mostly on already mined land. To collect his data, Tom takes samples from the overburden, the layers of rock lying over the coal seam. These layers are blasted to fragments during mining and are left at the site as "spoil" to form the base for new plant growth. Most reclamation problems stem from the chemical and



With a core-drilling rig, scientists can collect undisturbed and unweathered samples.

Juanita Huguely, technician, analyzes rock samples for various chemical and physical properties.

physical instability of spoil material. Tom collects spoil samples either by hand or with a core drilling rig. Technicians analyze the samples at the laboratory with a variety of instruments.

The challange for the geologist is to look beyond raw chemical and physical data, to relate the characteristics of the material back to its environment of the stripped site. He provides scientists who work in other areas of reclamation with information about the quantity and distribution of elements that may affect such vital things as vegetative growth, soil stability and water quality.

Tom can't help wondering how many problems could be avoided if careful examinations were made early in the process. Analysis of core samples taken from different parts of the proposed mining site would provide helpful data for reclamation. Nothing would be removed or blasted until the miners knew more about the total effect of any action. If sampling showed, for instance, that a site was loaded with acid-bearing rock and had a relatively small coal seam, then a company might decide not to mine there, avoiding potential waste. The option to make such decisions might be highly valuable to everyone involved in both mining and reclamation.

A strip-mine site revisited - vegetation almost hides the highwall.